

REMARKS

Claims 1-29 were pending and claims 1-21 and 23-29 were rejected. Claim 6, 10, 14, 17, and 22 were objected to. Claims 1, 2, 12, 13, 19, 20, and 24 have been amended herein. Claims 6, 14, and 22 have been cancelled herein. The applicants request reconsideration of the rejections of all pending claims.

I. Rejection of Claims 1-18 Under 35 U.S.C. §112

Claims 1-18 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, claims 1 and 12 recited “said composite images”, which the office action found to be ambiguous.

Claims 1 and 12 recite decomposing an input image into composite images. Some of the composite images are stored as reference images. Composite images are also compared to the reference images. Therefore, the use of “composite images” in the claims is correct.

Based on the foregoing, the applicants request reconsideration of the rejections.

II. Rejection of Claims 1, 7, 8, 19-21, 23, 24, 27, and 27 Under 35 U.S.C. §103(a)

Claims 1, 7, 8, 19-21, 23, 24, 27, and 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Friend in view of Fuji (U.S. 2002/0057736).

CLAIM 1

Claim 1, as amended herein, reads as follows:

A device for processing an image comprising:
decompose logic that is operable to decompose an input image into a plurality of composite images that comprise different frequency bands of said input image;
storage coupled to said decompose logic to store a plurality of composite images as reference images for comparison with a later input image;
comparison logic to compare said composite images with said reference images to produce preliminary motion values for said different frequency bands and wherein said comparison logic compares said preliminary motions values from different bands of said frequency bands to determine differences based on features in the spatial domain; and
logic to determine a final motion value from said preliminary motion values.

Per the office action, claim 6 was objected to as being dependent on a rejected base claim. Claim 6 has been incorporated into claim 1 per this response.

The applicants note that claim 6 depended from claim 2, which was not incorporated into claim 1. The applicants contend that there are no limitations in claim

2 that bear on claim 6. Accordingly, claim 6 can be incorporated into claim 1 without claim 2 being incorporated into claim 1.

Based on the foregoing, the applicants contend that claim 1 is allowable and request reconsideration of the rejection.

CLAIMS 7 AND 8

Claims 7 and 8 are dependent on claim 1 and are deemed allowable by way of their dependence and for other reasons. Accordingly, the applicants request reconsideration of the rejections.

CLAIM 19

Claim 19, as amended herein, reads as follows:

A method of motion detection using multiple frequency band image processing comprising:

receiving an input image;

decomposing said input image into a plurality of composite images that comprise different frequency bands of said input image;

comparing said composite images with reference composite images to produce preliminary motion values for said different frequency bands; and

determining a final motion value from said preliminary motion values, wherein said determining step compares said preliminary motion values from said different frequency bands to determine differences based on features repeating at different regularities in the spatial domain.

Per the office action, claim 22 was objected to as being dependent on a rejected base claim. Claim 22 has been incorporated into claim 19 per this response.

The applicants note that claim 22 depended from claim 20, which was not incorporated into claim 19. The applicants contend that there are no limitations in claim 20 that bear on claim 22. Accordingly, claim 22 can be incorporated into claim 19 without claim 20 being incorporated into claim 19.

Based on the foregoing, the applicants contend that claim 19 is allowable and request reconsideration of the rejection.

CLAIMS 20, 21, 23, 24, 26, AND 27

Claims 20, 21, 23, 24, 26, and 27 are dependent on claim 19 and are deemed allowable by way of their dependence and for other reasons. Accordingly, the applicants request reconsideration of the rejections.

III. Rejection of Claims 2-5, 9, 12, 13, 15, 16, and 25 Under 35 U.S.C. §103(a)

Claims 2-5, 9, 12, 13, 15, 16, and 25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Friend and Fuji (U.S. 2002/0057736), and further in view of Kroos (U.S. 6,931,145).

CLAIMS 2-5 AND 9

Claims 2-5 and 9 are dependent on claim 9 and are deemed allowable by way of their dependence and for other reasons. Accordingly, the applicants request reconsideration of the rejections.

CLAIM 12

Claim 12, as amended herein, reads as follows:

An optical navigation system comprising:

an image sensor;

transform logic coupled to the image sensor that is operable to perform a Discrete Wavelet Transform to decompose an input image from said image sensor into a plurality of composite images that comprise different frequency bands of said input image, wherein said transform logic produces images in which an "x" component and a "y" component comprise different frequency bands from each other, wherein repetitive features in the x-axis or y-axis of said input image are selectively filtered;

storage coupled to said transform logic to store a plurality of composite images as reference images for comparison with a later input image;

comparison logic to compare said composite images with said reference images to produce preliminary motion values for said different frequency bands; and

logic to determine a final motion value from said preliminary motion values.

Per the office action, claim 14 was objected to, but would be allowed if written in independent form. Claim 12 has been amended herein to include the limitations of claim 14. Thus, claim 12 is now allowable.

Based on the foregoing, the applicants request reconsideration of the rejection of claim 12.

CLAIMS 13, 15, 16, AND 25

Claims 13, 15, 16, and 25 are dependent on claim 12 and are deemed allowable by way of their dependence and for other reasons. Accordingly, the applicants request reconsideration of the rejections.

IV. Rejection of Claims 11 and 28 Under 35 U.S.C. §103(a)

Claims 11 and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Friend and Fuji (U.S. 2002/0057736), and further in view of Zafar.

Claims 11 and 28 are dependent on allowable base claims and are deemed allowable by way of their dependence and for other reasons. Accordingly, the applicants request reconsideration of the rejections.

V. Rejection of Claims 18 Under 35 U.S.C. §103(a)

Claim 18 was rejected under 35 U.S.C. §103(a) as being unpatentable over Friend, Fuji (U.S. 2002/0057736), Kroos, and further in view of Zafar.

Claims 18 is dependent on claim 12 and is deemed allowable by way of its dependence and for other reasons. Accordingly, the applicants request reconsideration of the rejection.

VI. Rejection of Claims 29 Under 35 U.S.C. §103(a)

Claim 29 was rejected under 35 U.S.C. §103(a) as being unpatentable over Friend and Fuji (U.S. 2002/0057736), and further in view of Rovati (7,099,512).

Claim 29 is dependent on claim 19 and is deemed allowable by way of its dependence and for other reasons. Accordingly, the applicants request reconsideration of the rejection.

VII. Objected to Claims

Claims 6, 10, 14, 17, and 22 were objected to as being dependent on rejected base claims. Claim 6 was incorporated into claim 1 and cancelled. Claim 14 was incorporated into claim 12 and cancelled. Claim 22 was incorporated into claim 19 and cancelled. The remaining claims remain pending and dependent on allowable base claims. Therefore, the applicants request reconsideration of the objections.

In view of the above, all of the pending claims are now believed to be in condition for allowance and a notice to that effect is earnestly solicited.

Respectfully submitted,
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